

**REMARKS**

Claims 1-7 and 9-23 are pending. Claim 8 has been cancelled without prejudice or disclaimer.

I. 35 USC § 112

The Office Action objects to or rejects claims 1-23 under 35 USC § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim that which is considered the invention. The Office Action points to a variety of terms used in the various claims, and asserts that such terms render the claims unclear and/or confusing.

a. "Functionality"

Applicants respectfully present that the definition of "functionality" and "multi-functional" is provided in the substitute specification in the second full paragraph on page 8:

The reactive part of the curable coating that is applied to the substrate 3 does not contain a photo-initiator, but does contain a substantial proportion (between 30% and 100% by weight) of multi-functional radiation curable elements. A multi-functional radiation curable element is a radiation curable element which comprises two or more functional groups. Functional groups are acrylate groups with C=C double bonds. If functionality is expressed as a number, the number indicates the number of C=C double bonds available to react, present in acrylate groups. (Emphasis added)

With respect to claims 6 and 7, the claimed multi-functional material may be a plurality of materials, each of which must be a multi-functional material having a functionality of at least three. However, in each of claims 6 and 7, after the first multi-functional material having a functionality of at least 3, any additional multi-functional material must also have a functionality of at least 3 (for each of claims 6-8). In any event, the subject matter of claim 8 has been incorporated into claim 1.

b. "at least 30% by weight multi-functional material"

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The Office Action additionally asserts that the weight percentage is unclear. In response Applicants present that claim 1 recites that the multi-functional material is at least 30% by weight of the coating composition. This percentage by weight is merely the weight of the multi-functional material compared to the weight of the entire coating composition. Thus, at least 30% by weight of the coating composition is a multi-functional material. This calculation does not refer to any ligand containing compound or require weighing of the functional groups. The particular wording of this feature is the weight of the material itself.

The multi-functional material may comprise one or more reactive diluents. Because the multi-functional material is defined as having a functionality of at least three, i.e., containing at least three acrylate groups, the reactive diluents must also comprise at least three acrylate groups.

The present claims recite a multi-functional material having a functionality of at least three. The multi-functional material may be a mixture, but all compounds must comprise at least three functional acrylate groups. The functional groups of one of the compounds may be identical, but may be different. For example, one compound may comprise both acrylate groups, methacrylate groups, and/or ethacrylate groups. Similarly, if the material is a mixture of several compounds, the functional groups of these compounds may, for instance, be identical, or one compound may have only acrylate groups and another compound may comprise both methacrylate and acrylate groups. Further, in a mixture, one compound may have three functional groups and another may have four or five functional groups. It is respectfully presented that each of the examples provided herein are within the scope of claim 1.

c. "solvent resistant coating"

The Office Action asserts that because almost all solids are resistant to dissolution by some solvent, the term "solvent resistant coating" is vague and indefinite. Applicants respectfully present that the coating obtained by the present inventions is "solvent resistant" according to generally accepted terminology. In any event, claim 1 has been amended to recite that the solvent resistant coating is resistant to at least an acetone solvent.

d. "inert gas"

The Office Action asserts that claims 3 and 23 are indefinite because of an apparent confusion of the use of the term "inert gas". Applicants respectfully present that inert, as used throughout the present specification, is intended to mean "unreactive", and is not intended to identify a Group of elements on the periodic table. Applicants agree that nitrogen is a group VA element, i.e., not a Group VIIIA element. However, the applicant may be his own lexicographer, Fromson v. Advance Offset Plate, Inc., 720 F.2d 1565, 1569, 219 U.S.P.Q. (BNA) 1137, 1140 (Fed. Cir. 1983), and because "inert" means "unreactive", the inert gas recited by the present claims need not be limited to THE Inert Gasses of Group VIIIA. In any event, claim 2 has been amended in accordance with the Examiner's suggestion to recite that the inert gas is inert with respect to the coating. Reconsideration is requested.

e. Claim 23

The Office Action further rejects claim 23 under 35 USC § 112, first paragraph, as allegedly containing subject matter not adequately described in the specification. The Office Action states that the specification contains no general or unspecified solvent resistance. As claim 23 is directed to the inert gas, and not to solvent resistance, reconsideration is requested. Additionally, Applicants reiterate that claim 23 is supported in the Substitute Specification at page 9, line 8.

II. 35 USC § 103

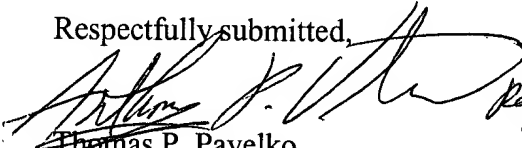
Claims 1-22 stand rejected under 35 USC § 103(a) as allegedly being unpatentable over Moussa et al. (U.S. Patent No. 5,047,261), alone or in further view of Jonsson et al. (U.S. Patent No. 5,446,073). However, Applicants respectfully assert, as discussed above, the carbonates presented in Moussa et al. do not have three functionalities, because the carbonates have only a single functional group. While Moussa et al. teaches a mono(meth)acrylic carbonate as Formula I, under the definition of functionality, described above and presently recited by claim 1, such carbonate is actually monofunctional, as it contains only a single acrylic group.

Despite the teaching in Moussa et al. to crosslink without a photoinitiator in Examples 32-32 and irradiating in an inert nitrogen atmosphere, there is neither a teaching nor a suggestion to expose a composition containing at least 30% by weight of a multi-functional material having at least three functional acrylate groups to ultra-violet light under an inert atmosphere. For the composition containing only the monofunctional carbonate monomer (Examples 32 and 33), there is a substantial increase in the degree of conversion when using nitrogen instead of air. However, this difference is much less pronounced for the composition containing the double functional diacrylic polyurethane (Examples 34 and 35).

Thus, Moussa et al. effectively teaches away from UV curing without a photoinitiator, even with the "special" carbonate described therein. No composition comprising multi-functional material with at least three functional acrylate groups is described either by Moussa et al or Jonsson et al. On the contrary, Moussa et al. states that polyfunctional acrylates give less satisfactory results in the coating due to higher residual unsaturation. Thus, Moussa et al. teaches to utilize the monofunctional carbonate B. And because Jonsson et al. does not cure these deficiencies, no prima facie case of obviousness can be established, and reconsideration is requested.

In view of the foregoing remarks and analysis, it is respectfully submitted the claims now pending in the application comply with all statutory requirements, and are presently in condition for immediate allowance. Early favorable action is earnestly solicited.

Respectfully submitted,

  
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ATTACHMENT - Marked-Up Claims

1. (Twice Amended) A method of coating a substrate, the method comprising applying a coating composition to at least selected areas of the substrate, exposing the coated substrate to ultra-violet light from at least one lamp having a power output of at least 140 watts per linear centimeter in a curing zone, to initiate curing of the coating, the coating composition comprising a mixture including at least a reactive part comprising at least 30% by weight multi-functional material having a functionality of at least three, wherein the multi-functional material comprises at least one material having at least three functional acrylate groups, and being photo-initiator free, including maintaining a substantially inert atmosphere in the curing zone where the substrate is exposed to said ultra-violet light, so as to obtain an at least an acetone [a] solvent resistant coating.
  2. (Amended) A method according to claim 1, wherein the inert atmosphere is obtained by purging the [said] curing zone with inert gas, wherein said gas does not react with said coating.
  4. (Thrice Amended) A method according to Claim 1, wherein an oxygen concentration of the [said] curing zone is less than 1,000 parts per million.
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